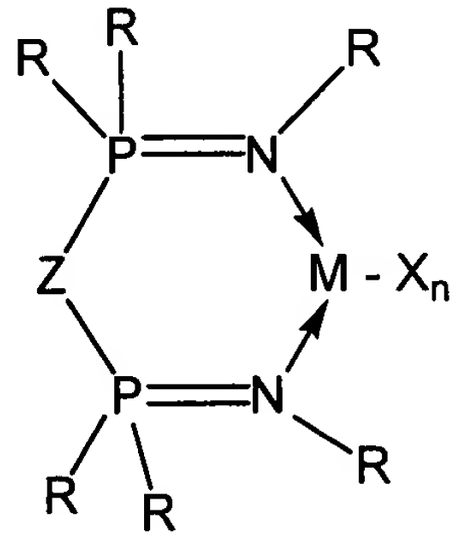
**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions and listings of claims in the application:

1-38. (Cancelled)

39. (Currently amended) A polymerization catalyst comprising

(1) a transition metal complex having the formula:




wherein M is Fe[II], Fe[III], Co[I], Co[II], Co[III], Mn[I], Mn[II], Mn[III], Mn[IV], Ru[II], Ru[III] or Ru[IV]; X represents an atom or group covalently or ionically bonded to the transition metal M;

R is independently selected from hydrogen, halogen, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl or substituted heterohydrocarbyl;

Z is a bridging group comprising a donor atom of N, P or S or alternatively is a neutral group comprising a $C_{1-4}$ alkylene group, a silyl group or a germyl group; and

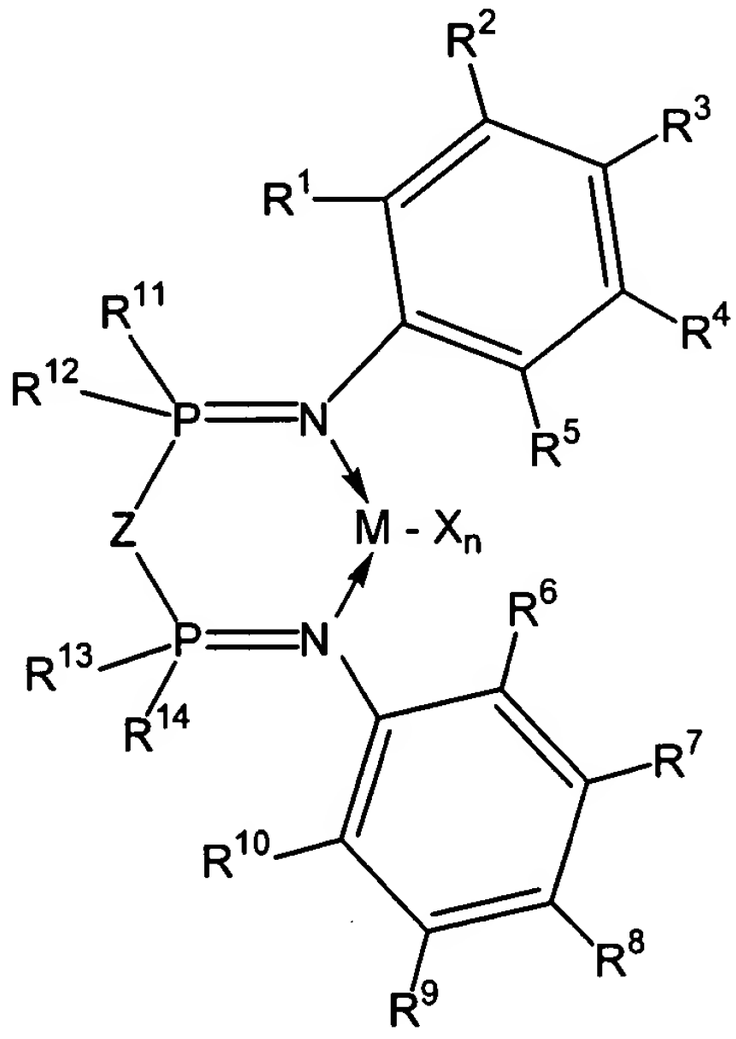
n = an integer to satisfy the valency of M, **[[**and**]]**

(2) an activating quantity of an activator compound**[[**.**]]**, and

(3) a support.

40. (Currently amended) A polymerization catalyst comprising

(1) a transition metal complex having the formula:



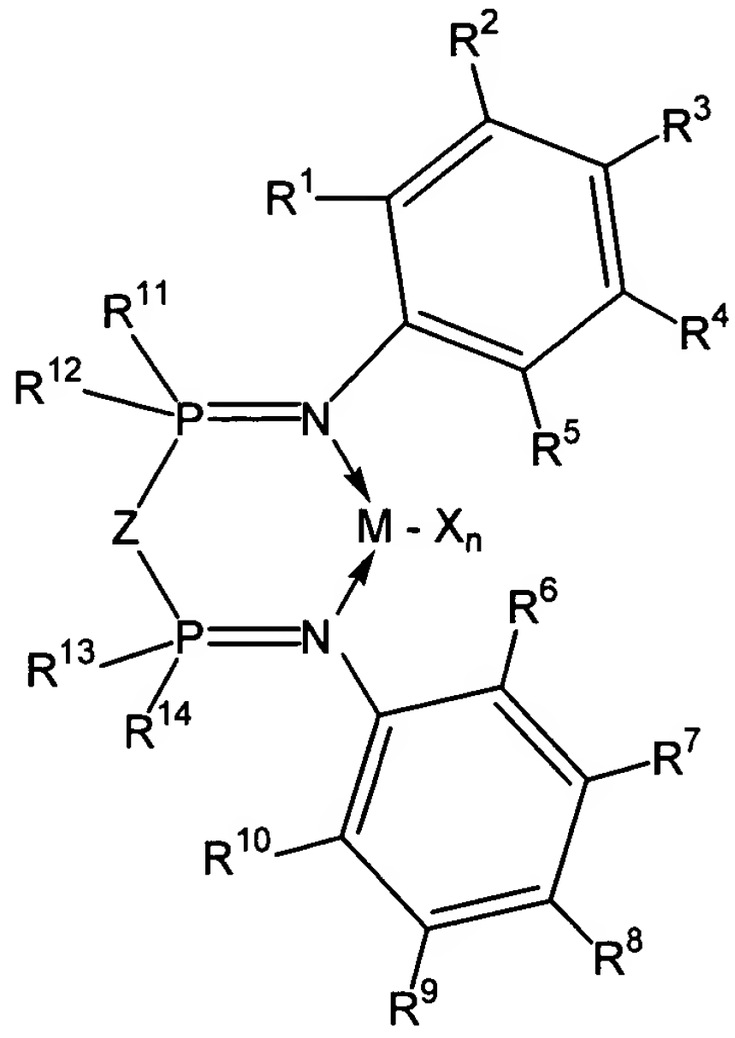

wherein M is Fe[II], Fe[III], Co[I], Co[II], Co[III], Mn[I], Mn[II], Mn[III], Mn[IV], Ru[II], Ru[III] or Ru[IV]; X represents an atom or group covalently or ionically bonded to the transition metal M; Z is a bridging group comprising a donor atom of N, P or S or alternatively is a neutral group comprising a $C_{1-4}$ alkylene group, a silyl group or a germyl group**[[,]]**; $R^1$-$R^{14}$ are independently selected from hydrogen, halogen, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl or substituted heterohydrocarbyl; and n = an integer to satisfy the valency of M, **[[**and**]]**

(2) an activating quantity of an activator compound**[[.]]**, and

(3) a support.

41. (Currently amended) A polymerization catalyst comprising

(1) a complex having the formula




wherein M is Fe[II], Fe[III], Ni[II], Co[I], Co[II], Co[III], Mn[I], Mn[II], Mn[III], Mn[IV], Ru[II], Ru[III], Ru[IV], Pd[II], V[III], V[IV] or V[V];

X represents an atom or group covalently or ionically bonded to the transition metal M;

Z is a bridging group comprising a donor atom of N, P or S or alternatively is a neutral group comprising a $C_{1-4}$ alkylene group, a silyl group or a germyl group**[[,]]**;

$R^1$-$R^{14}$ are independently selected from hydrogen, halogen, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, or substituted heterohydrocarbyl, and at least one of $R^1$-$R^{10}$ contains two or more carbon atoms; and

n = an integer to satisfy the valency of M, **[[**and**]]**

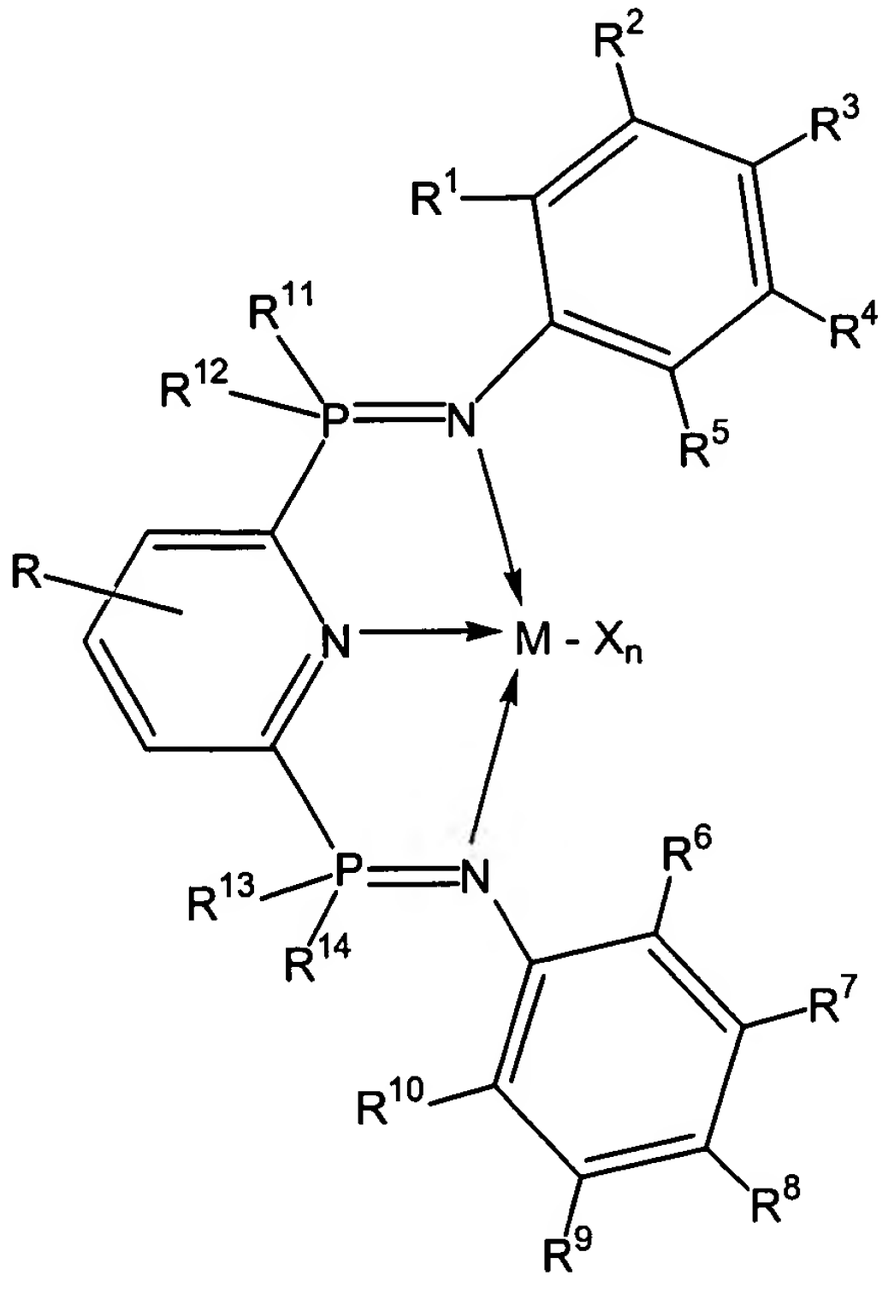
(2) an activating quantity of an activator compound**[[.]]**, and

(3) a support.

42. (Previously presented) The polymerization catalyst of claim 40 or 41 wherein $R^{11}$-$R^{14}$ are phenyl, alkyl or cycloalkyl.

43. (Previously presented) The polymerization catalyst of claim 39, 40, or 41 wherein the bridging group Z is $-CH_2-$ or a donor atom N.

44. (Previously presented) The polymerization catalyst of claim 40 or 41 having the formula:




wherein R is hydrogen or hydrocarbyl.

45. (Previously presented) The polymerization catalyst of claim 39, 40, or 41 wherein the metal M is Fe or Co.

46. (Previously presented) The polymerization catalyst of claim 39, 40, or 41 wherein the Group X is chloride.

47. (Previously presented) The polymerization catalyst of claim 39, 40, or 41 wherein the activator compound is an organoaluminum compound or a hydrocarbylboron compound.

48. (Previously presented) The polymerization catalyst of claim 39, 40, or 41 further comprising a neutral Lewis base.

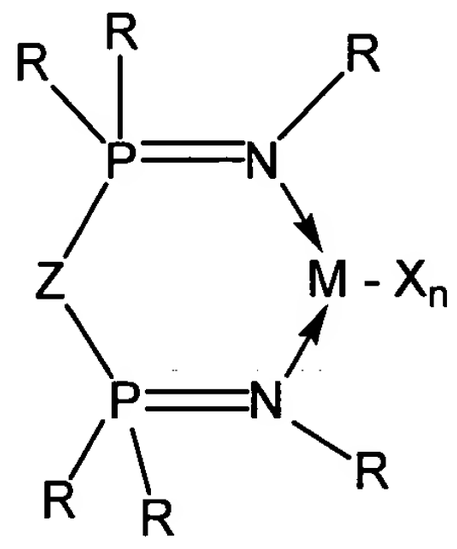
49. (Cancelled).

50. (Currently amended) The polymerization catalyst of claim **[[**49**]]**39, 40, or 41 wherein the support is silica, alumina, or zirconia or is a polymer or prepolymer.

51. (Currently amended) The polymerization catalyst of claim 39, 40, or 41 further comprising a catalyst suitable for the polymerization of olefins ~~of the type used in~~ selected from the group consisting of Ziegler-Natta ~~catalyst systems~~ catalysts, metallocene-based catalysts, monocyclopentadienyl- **[[**or**]]** and constrained geometry based catalysts, or heat activated supported chromium oxide catalysts.

52. (New) A polymerization catalyst comprising

(1) a transition metal complex having the formula:



wherein M is Fe[II], Fe[III], Co[I], Co[II], Co[III], Mn[I], Mn[II], Mn[III], Mn[IV], Ru[II], Ru[III] or Ru[IV]; X represents an atom or group covalently or ionically bonded to the transition metal M;

R is independently selected from hydrogen, halogen, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl or substituted heterohydrocarbyl;

Z is a bridging group comprising a donor atom of N, P or S or alternatively is a neutral group comprising a $C_{1-4}$ alkylene group, a silyl group or a germyl group; and

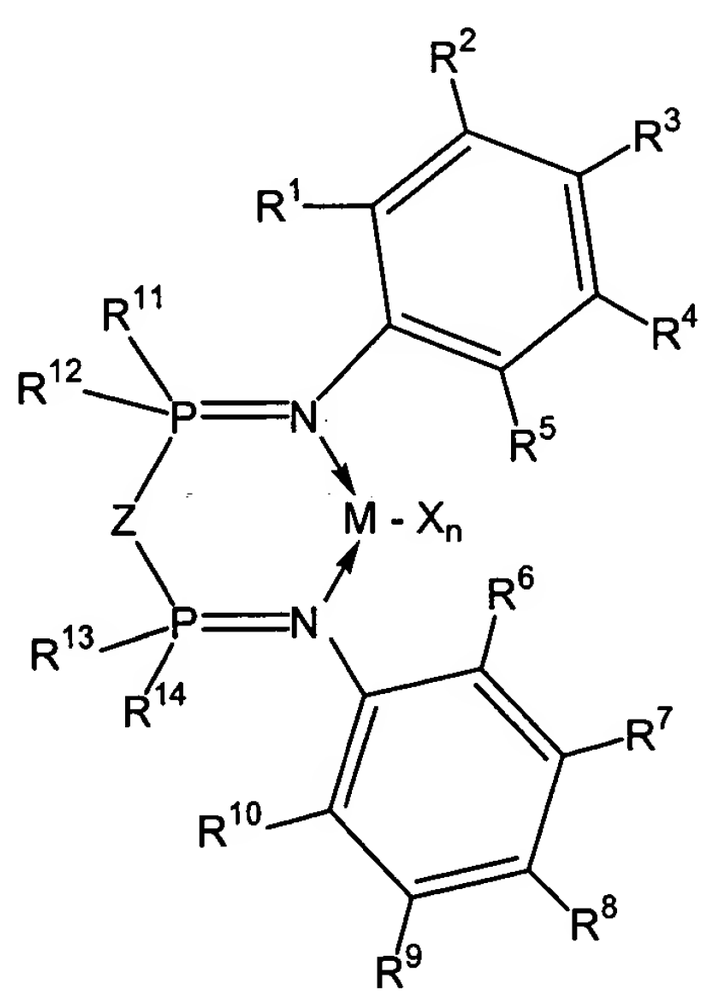
n = an integer to satisfy the valency of M,

(2) an activating quantity of an activator compound, and

(3) a catalyst suitable for the polymerization of olefins selected from the group consisting of Ziegler-Natta catalysts, metallocene-based catalysts, monocyclopentadienyl- or constrained geometry based catalysts, and heat activated supported chromium oxide catalysts.

53. (New) A polymerization catalyst comprising

(1) a transition metal complex having the formula:



wherein M is Fe[II], Fe[III], Co[I], Co[II], Co[III], Mn[I], Mn[II], Mn[III], Mn[IV], Ru[II], Ru[III] or Ru[IV]; X represents an atom or group covalently or ionically bonded to the transition metal M; Z is a bridging group comprising a donor atom of N, P or S or alternatively is a neutral group comprising a $C_{1-4}$ alkylene group, a silyl group or a germyl group;

$R^1$-$R^{14}$ are independently selected from hydrogen, halogen, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl or substituted heterohydrocarbyl; and

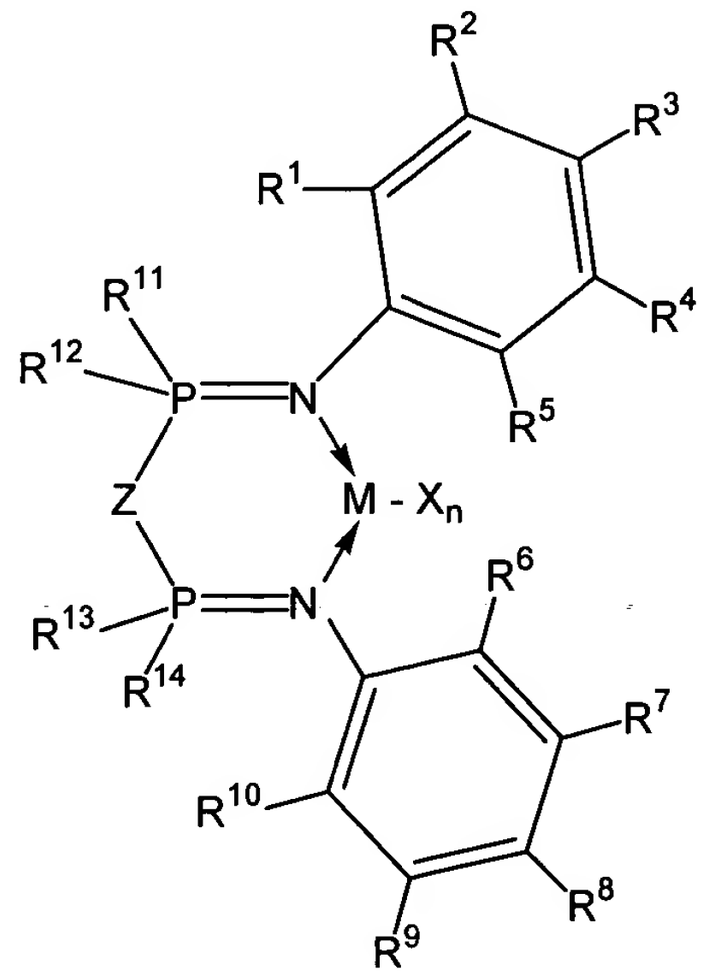
n = an integer to satisfy the valency of M,

(2) an activating quantity of an activator compound, and

(3) a catalyst suitable for the polymerization of olefins selected from the group consisting of Ziegler-Natta catalysts, metallocene-based catalysts, monocyclopentadienyl- or constrained geometry based catalysts, and heat activated supported chromium oxide catalysts.

54. (New) A polymerization catalyst comprising

(1) a complex having the formula



wherein M is Fe[II], Fe[III], Ni[II], Co[I], Co[II], Co[III], Mn[I], Mn[II], Mn[III], Mn[IV], Ru[II], Ru[III], Ru[IV], Pd[II], V[III], V[IV] or V[V];

X represents an atom or group covalently or ionically bonded to the transition metal M;

Z is a bridging group comprising a donor atom of N, P or S or alternatively is a neutral group comprising a $C_{1-4}$ alkylene group, a silyl group or a germyl group;

$R^1$-$R^{14}$ are independently selected from hydrogen, halogen, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, or substituted heterohydrocarbyl, and at least one of $R^1$-$R^{10}$ contains two or more carbon atoms; and

n = an integer to satisfy the valency of M,

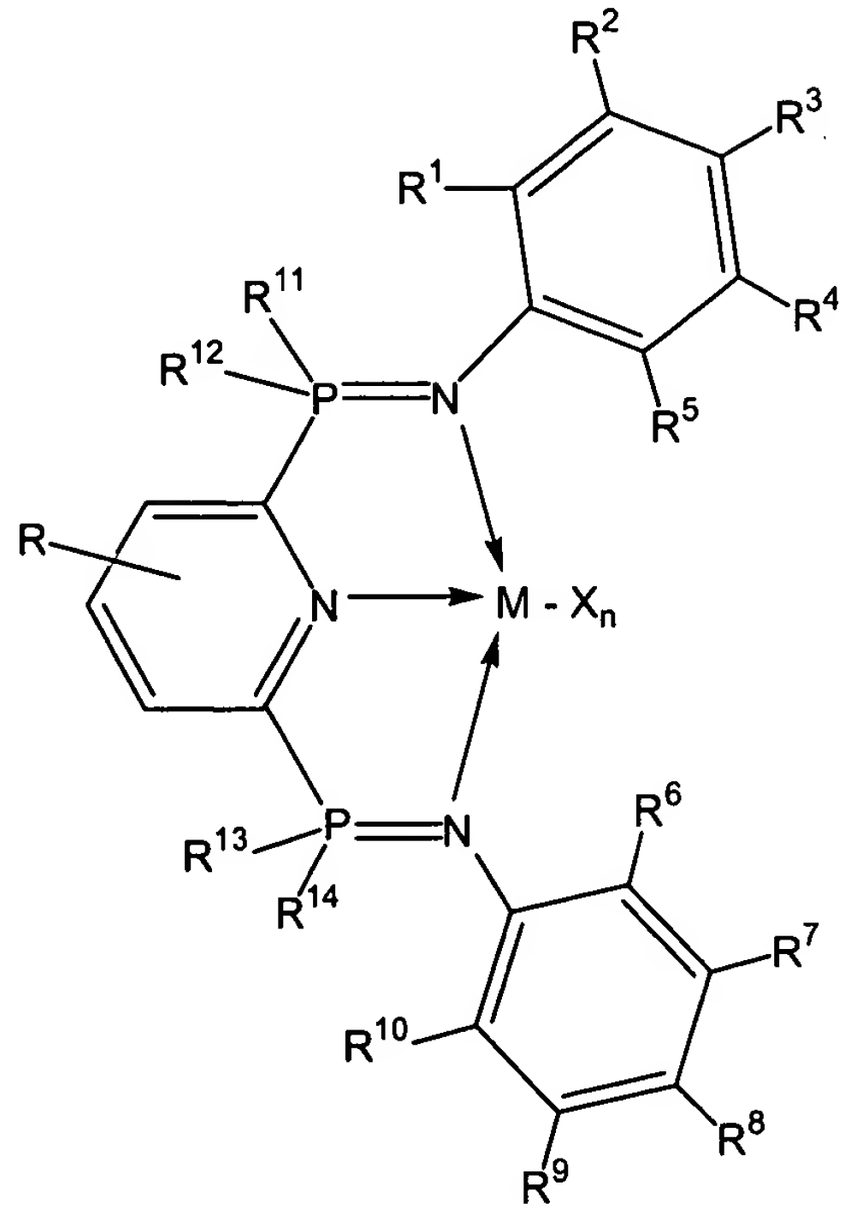
(2) an activating quantity of an activator compound, and

(3) a catalyst suitable for the polymerization of olefins selected from the group consisting of Ziegler-Natta catalysts, metallocene-based catalysts, monocyclopentadienyl- or constrained geometry based catalysts, and heat activated supported chromium oxide catalysts.

55. (New) The polymerization catalyst of claim 53 or 54 wherein $R^{11}$-$R^{14}$ are phenyl, alkyl, or cycloalkyl.

56. (New) The polymerization catalyst of claim 52, 53, or 54 wherein the bridging group Z is $-CH_2-$ or a donor atom N.

57. (New) The polymerization catalyst of claim 53 or 54 having the formula:




wherein R is hydrogen or hydrocarbyl.

58. (New) The polymerization catalyst of claim 52, 53, or 54 wherein the metal M is Fe or Co.

59. (New) The polymerization catalyst of claim 52, 53, or 54 wherein the Group X is chloride.

60. (New) The polymerization catalyst of claim 52, 53, or 54 wherein the activator compound is an organoaluminum compound or a hydrocarbylboron compound.

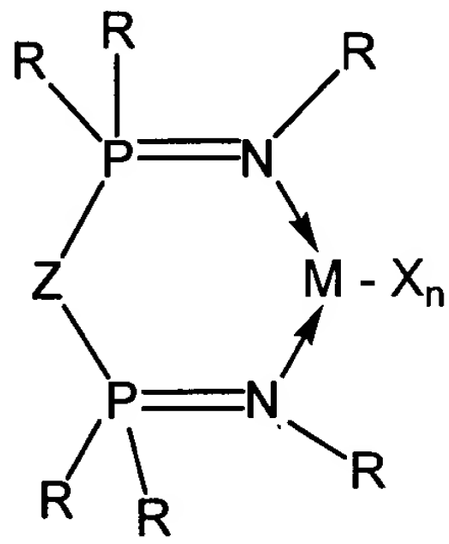
61. (New) The polymerization catalyst of claim 52, 53, or 54 further comprising a neutral Lewis base.

62. (New) The polymerization catalyst of claim 52, 53, or 54 further comprising a support.

63. (New) The polymerization catalyst of claim 62 wherein the support is silica, alumina, or zirconia or is a polymer or prepolymer.

64. (New) A polymerization catalyst comprising

(1) a transition metal complex having the formula:




wherein M is Fe[II], Fe[III], Co[I], Co[II], Co[III], Mn[I], Mn[II], Mn[III], Mn[IV], Ru[II], Ru[III] or Ru[IV]; X represents an atom or group covalently or ionically bonded to the transition metal M;

R is independently selected from hydrogen, halogen, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl or substituted heterohydrocarbyl;

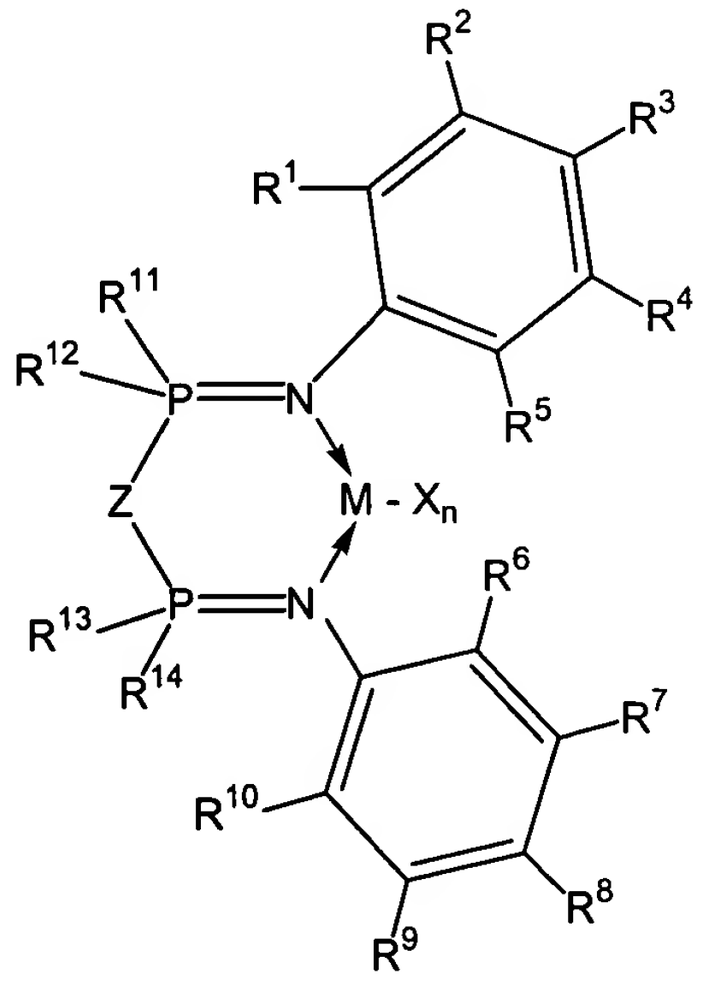
Z is $-CH_2-$; and

n = an integer to satisfy the valency of M, and

(2) an activating quantity of an activator compound.

65. (New) A polymerization catalyst comprising

(1) a transition metal complex having the formula:




wherein M is Fe[II], Fe[III], Co[I], Co[II], Co[III], Mn[I], Mn[II], Mn[III], Mn[IV], Ru[II], Ru[III] or Ru[IV]; X represents an atom or group covalently or ionically bonded to the transition metal M;

Z is $-CH_2-$;

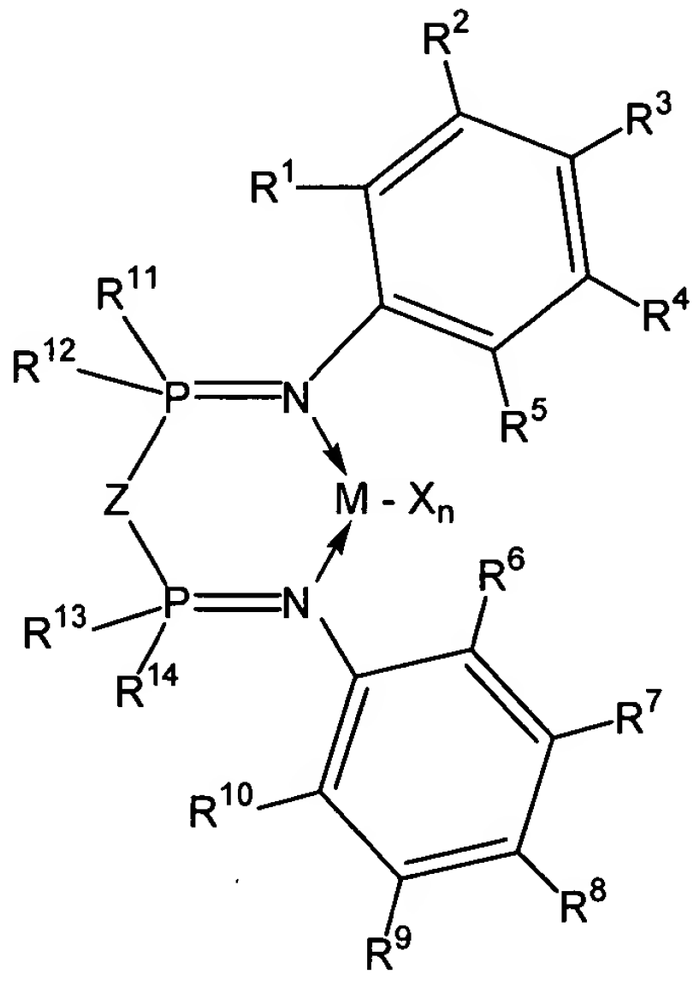
$R^1$-$R^{14}$ are independently selected from hydrogen, halogen, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl or substituted heterohydrocarbyl; and

n = an integer to satisfy the valency of M, and

(2) an activating quantity of an activator compound.

66. (New) A polymerization catalyst comprising

(1) a complex having the formula




wherein M is Fe[II], Fe[III], Ni[II], Co[I], Co[II], Co[III], Mn[I], Mn[II], Mn[III], Mn[IV], Ru[II], Ru[III], Ru[IV], Pd[II], V[III], V[IV] or V[V];

X represents an atom or group covalently or ionically bonded to the transition metal M;

Z is $-CH_2-$;

$R^1$-$R^{14}$ are independently selected from hydrogen, halogen, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, or substituted heterohydrocarbyl, and at least one of $R^1$-$R^{10}$ contains two or more carbon atoms; and

n = an integer to satisfy the valency of M, and

(2) an activating quantity of an activator compound.

67. (New) The polymerization catalyst of claim 65 or 66 wherein $R^{11}$-$R^{14}$ are phenyl, alkyl, or cycloalkyl.

68. (New) The polymerization catalyst of claim 64, 65, or 66 wherein the metal M is Fe or Co.

69. (New) The polymerization catalyst of claim 64, 65, or 66 wherein the Group X is chloride.

70. (New) The polymerization catalyst of claim 64, 65, or 66 wherein the activator compound is an organoaluminum compound or a hydrocarbylboron compound.

71. (New) The polymerization catalyst of claim 64, 65, or 66 further comprising a neutral Lewis base.

72. (New) The polymerization catalyst of claim 64, 65, or 66 further comprising a support.

73. (New) The polymerization catalyst of claim 72 wherein the support is silica, alumina, or zirconia or is a polymer or prepolymer.

74. (New) The polymerization catalyst of claim 64, 65, or 66 further comprising a catalyst suitable for the polymerization of olefins selected from the group consisting of Ziegler-Natta catalysts, metallocene-based catalysts, monocyclopentadienyl- or constrained geometry based catalysts, and heat activated supported chromium oxide catalysts.

75. (Withdrawn/New) A process for the polymerization or copolymerization of olefins comprising contacting a monomeric olefin under polymerization conditions with a catalyst as defined in claim 39, 40, 41, 52, 53, 54, 64, 65, or 66.

76. (Withdrawn/New) The process of claim 75 wherein the polymerization conditions are solution phase, slurry phase, or gas phase.

77. (Withdrawn/New) The process of claim 76 wherein the polymerization is conducted under gas phase fluidized bed conditions.

78. (Withdrawn/New) The process of claim 77 wherein the polymerization is conducted under condensed mode.

79. (Withdrawn/New) The process of claim 75 wherein hydrogen is used to control the average molecular weight of the polymer.